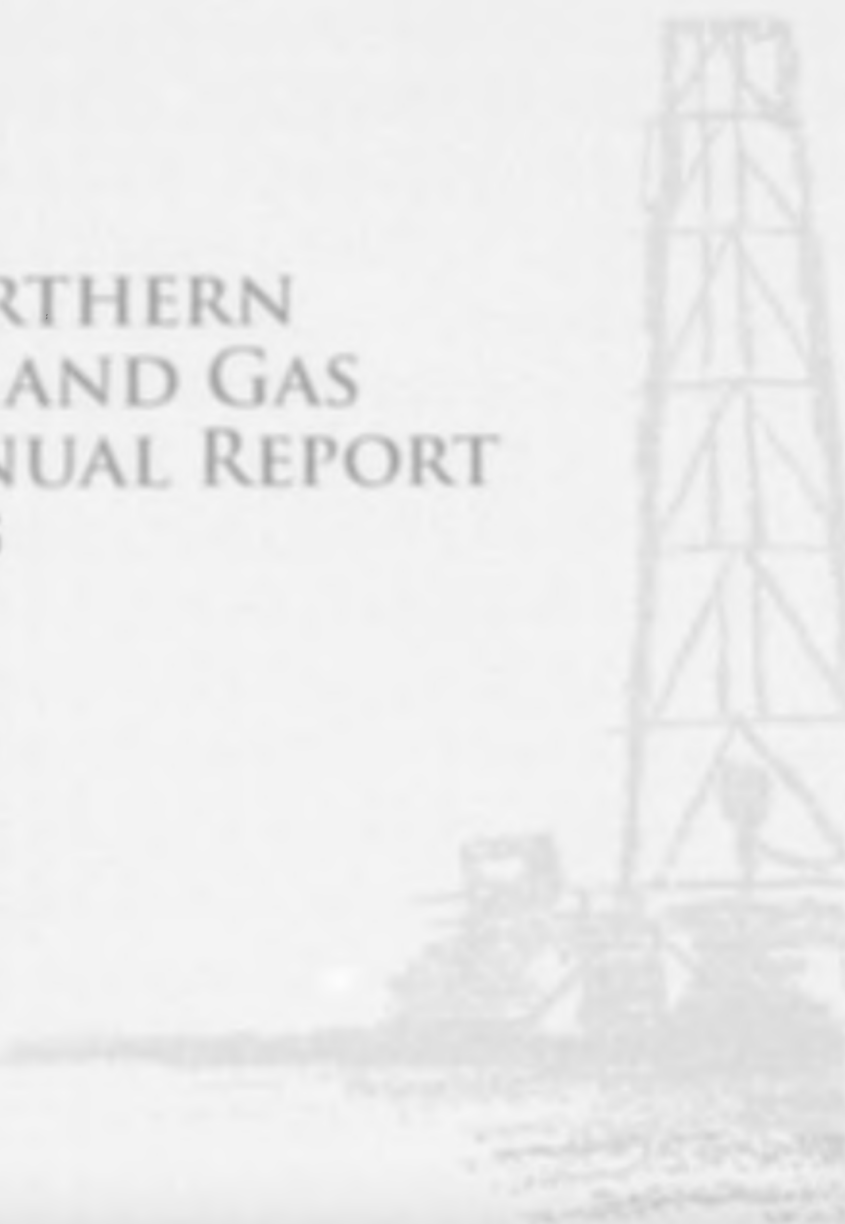




Indigenous and
Northern Affairs Canada

Affaires autochtones
et du Nord Canada

NORTHERN OIL AND GAS ANNUAL REPORT 2015



Canada^{1st}



Indigenous and
Northern Affairs Canada

Affaires autochtones
et du Nord Canada

Northern Oil and Gas Annual Report 2015

FOREWORD

The Northern Oil and Gas Annual Report is prepared in accordance with section 109 of the *Canada Petroleum Resources Act* (CPRA) which notes:

The Minister shall, within ninety days after the end of each year, cause to be prepared a report with respect of the administration of this Act during that year, and shall cause the report to be laid before each House of Parliament on any of the first fifteen days on which that House is sitting after the day the report is prepared.

Northern Canada comprises approximately 38% of Canada's remaining marketable resources of natural conventional gas, as well as 35% of the remaining conventional light crude. Federal responsibility for the management of oil and gas resources on Crown lands north of 60°N in the Northwest Territories, Nunavut and Northern offshore is administered by the Petroleum and Mineral Resources Management Directorate under the mandate of the CPRA by:

- Granting and managing Crown exploration and production rights;
- Administering the public register of northern petroleum interests and instruments;
- Governing matters related to the benefit and royalty regime.

Detailed information on the distribution of oil and gas resources in the North can be found in Canada's Energy Futures and also in Northern Canada Distribution of Ultimate Oil and Gas Resources and further information about northern petroleum resource management may also be found at: www.anlnc-atndc.gc.ca/eng/1100100036087

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Minister's Message

I am pleased to table before Parliament the annual report on the administration of the *Canada Petroleum Resources Act* (CPRA) in the Northwest Territories, Nunavut and Northern offshore for the year ending December 31, 2015.

The past year has presented challenges for the development of natural resources in the North. The overall economic environment has meant that resource projects are not proceeding as originally planned. While there was limited interest in new offshore developments in 2015, it is important to note that resource development projects, particularly deep water projects, are decades-long investment decisions. Regardless of the current market states, the resource development potential of Canada's North will generate interest for decades to come.

2015 saw progress on other fronts related to northern oil and gas management. In support of the Government of Canada's continued pledge towards responsible, sustainable resource development, the Beaufort Regional Environmental Assessment (BREA) continued its fourth year of research activities in 2015 and concluded in March. The work done under BREA will ensure governments, Indigenous groups and our partners industry are better informed and, subsequently, better prepared for oil and gas exploration and development in the future.

Also in 2015, Mr. Rowland Harrison, Q.C., was appointed as Ministerial Special Representative to conduct a comprehensive review of the operations of the CPRA to determine how the Act can best contribute to the responsible development of Canada's Arctic oil and gas resources. I was pleased to confirm his appointment in November 2015, as the Government of Canada is committed to restoring public confidence in the appropriate regulatory oversight, especially as it relates to the North which is home to both fragile ecosystems and tremendous economic potential.

The Government of Canada has pledged to continue promoting a modern, effective and safe oil and gas regulatory regime that upholds world-class environmental standards in the North. We are committed to working with Indigenous Peoples when considering the development of natural resources and will do so in a responsible and environmentally sound manner. Work will continue with both our domestic and international partners to promote a sustainable Arctic economy, where resource development decisions are based on science, facts, and evidence, and serve the public's interest.

I invite you to consult this report for further details on the development of Canada's Northern oil and gas resources over the past year.

The Honourable Carolyn Bennett, M.D., P.C., M.P.,
Minister of Indigenous and Northern Affairs



**Frontier Lands* under the administrative responsibility of
the Minister of Indigenous and Northern Affairs:**

*Frontier lands are defined under section 2 of the *Canada Petroleum Resources Act* R.S.C. 1985, c.36 (2nd Supp.), as amended April 1, 2014, as follows:

"Frontier Lands" means lands that belong to Her Majesty in right of Canada, or in respect of which Her Majesty in right of Canada has the right to dispose of or exploit the natural resources, and that are situated in:

- (a) the part of the onshore that is under the administration of a federal minister;
- (b) Nunavut;
- (c) Sable Island;
- (d) the submarine areas in that part — of the internal waters of Canada or the territorial sea of Canada — that is not situated
 - (i) in a province other than the Northwest Territories, or;
 - (ii) in that part of the onshore that is not under the administration of a federal minister, or;
- (e) the continental shelf of Canada, but does not include the adjoining area, as defined in section 2 of the *Yukon Act*.



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CANADA PETROLEUM RESOURCES ACT ACTIVITIES

CURRENT DISPOSITION OF INTERESTS

Indigenous and Northern Affairs Canada maintains a public registry of petroleum interests and instruments registered under Part VIII of the *Canada Petroleum Resources Act*. This registry is the official record of rights holders, and any transfer of rights or change of ownership must be registered. Monthly activity reports are available on: www.aandnc-aandc.gc.ca/eng/1100100036878

There are three types of licences:

1. **Exploration Licence (EL)** - An exploration licence confers, with respect to the frontier lands to which the licence applies, the right to explore for, and the exclusive right to drill and test for, petroleum; the exclusive right to develop those frontier lands in order to produce petroleum; and the exclusive right, subject to compliance with the other provisions of this Act, to obtain a production licence.
2. **Significant Discovery Licence (SDL)** - A significant discovery licence confers, with respect to the frontier lands to which the licence applies, the right to explore for, and the exclusive right to drill and test for, petroleum; the exclusive right to develop those frontier lands in order to produce petroleum; and the exclusive right, subject to compliance with the other provisions of this Act, to obtain a production licence.
3. **Production Licence** - A production licence confers, with respect to the frontier lands to which the licence applies, the right to explore for, and the exclusive right to drill and test for, petroleum; the exclusive right to develop those frontier lands in order to produce petroleum; the exclusive right to produce petroleum from those frontier lands; and title to the petroleum so produced.

The following figures and tables detail current exploration licences, significant discovery licences and exploratory permits¹ in place as of December 31, 2015.

¹ Permits and/or leases issued under former legislative regimes and continued in force pursuant to subsection 112(2) of the *Canada Petroleum Resources Act*.



Figure 1: Map of the Beaufort Sea Region



Figure 2: Map of the Arctic Islands Region

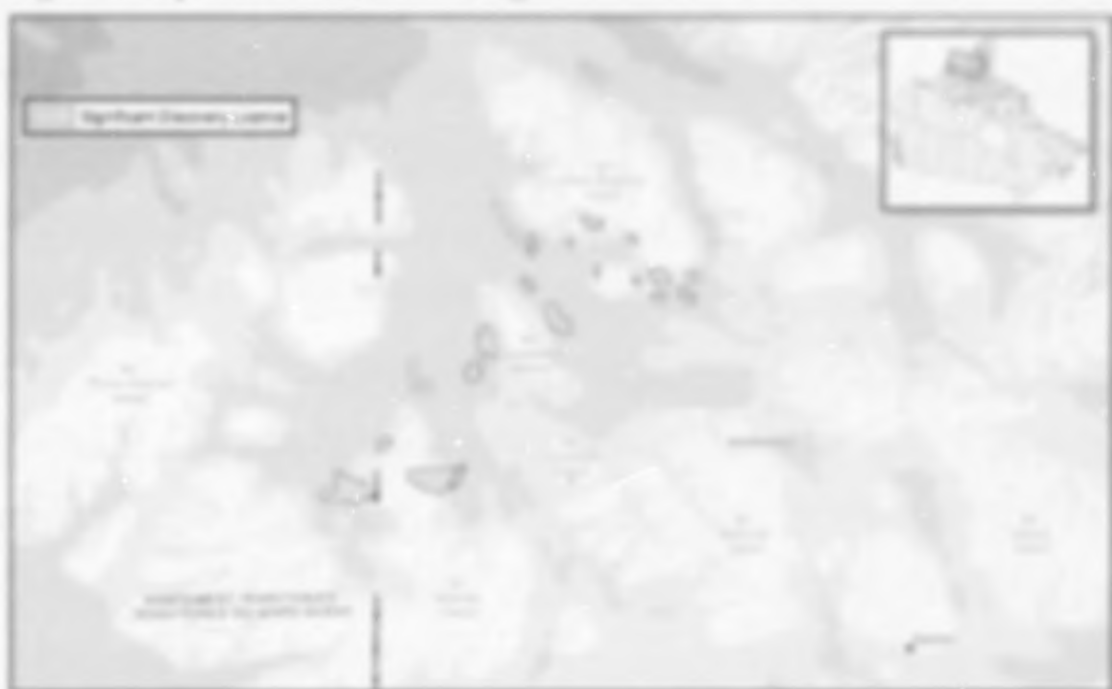


Figure 3 Map of the Eastern North Pacific



Table 2 Land Mortality as of December 15, 2013

Inshore					
Species	Estimated Number	Reported Number	Estimated Number	Reported Number	Total
Adult female of Chinook	0	27,000	0	0	27,000
Female Chinook offshoot	0	15,000	0	400,000	415,000
Adult fish	0	0	0	100,000	100,000
Adult fish	1,000,000	100,000	0	0	1,100,000
Female Chinook offshoot	0	0	0	0	0
Total	1,000,000	100,000	0	400,000	1,400,000

Inshore (East) mortality of Chinook

Species	Estimated Number	Reported Number	Estimated Number	Reported Number	Total
Adult female of Chinook	0	0	0	0	0
Female Chinook offshoot	0	1	0	0	1
Adult fish	0	0	0	0	0
Adult fish	0	0	0	0	0
Female Chinook offshoot	0	0	0	0	0
Total	0	0	0	0	0

Percent adult female Chinook mortality inshore (estimated number and reported number) as of December 15, 2013, of the Coastal Fisheries Resource (CFR)





Map of the Malay Peninsula
and surrounding regions
showing the location of the
Andaman Sea and the Gulf of Thailand.

Legend:
1. Andaman Sea
2. Gulf of Thailand
3. Malay Peninsula
4. Sumatra
5. Java
6. Borneo
7. Celebes
8. Philippines
9. Indonesia
10. Malaysia
11. Singapore
12. Brunei
13. East Timor
14. Papua New Guinea
15. Australia
16. New Zealand
17. South Africa
18. India
19. Pakistan
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Introduction and Overview

The purpose of this paper is to provide a comprehensive overview of the current state of research on the ethical implications of artificial intelligence (AI) and robotics. The paper will explore the various ethical issues that arise from the development and use of AI and robotics, and will discuss the challenges that researchers and practitioners face in addressing these issues.

The paper is organized into several sections. The first section, "Introduction and Overview," provides a general introduction to the topic and outlines the structure of the paper. The second section, "The Ethical Implications of AI and Robotics," discusses the various ethical issues that arise from the development and use of AI and robotics. The third section, "The Challenges of Addressing Ethical Issues in AI and Robotics," discusses the challenges that researchers and practitioners face in addressing these issues. The fourth section, "Conclusion," provides a summary of the paper's findings and discusses the implications of these findings for future research and practice.

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- (2) The second section of the paper discusses the various ethical issues that arise from the development and use of AI and robotics.
- (3) The third section of the paper discusses the challenges that researchers and practitioners face in addressing these issues.
- (4) The fourth section of the paper provides a summary of the paper's findings and discusses the implications of these findings for future research and practice.



Once a developer has determined that a discovery is commercial and wishes to commence oil or gas production, legislation allows for application to the National Energy Board for a declaration of commercial discovery. Similar to the provisions for issuance of a significant discovery licence, issuance of a production licence is possible either:

- a) upon application of the interest owner of an exploration licence or significant discovery licence subject to all or a portion of the commercial discovery area; or,
- b) by award to the successful bidder following a Call for Bids in relation to all or a portion of the commercial discovery area.

A production licence has a term of 25 years which is renewable so long as commercial production continues. A company may proceed directly to commercial discovery and a production licence without the intervening step of obtaining a significant discovery licence.

Land dispositions and exploration licences as of December 31, 2007 are outlined in Table 1 and Table 2. Current oil and gas disposition maps are available on the Indigenous and Northern Affairs Canada website at: www.inac-aindc.gc.ca/eng/110000005x125.

2007 Call for Bids

No Calls for Nominations or Bids were held in the 2007 calendar year.

REVIEW OF THE CANADA PETROLEUM RESOURCES ACT

In July 2005, then Minister of Aboriginal Affairs and Northern Development appointed Rowland Harrison, Q.C., as Ministerial Special Representative to conduct a comprehensive review of the operations of the *Canada Petroleum Resources Act*. In November 2005, Minister Bennett confirmed Mr. Harrison's appointment and his work has continued. The Ministerial Special Representative has been involved in an engagement process with Indigenous governments, organizations, stakeholders and other interested parties to determine how the Act can best contribute to the responsible development of Canada's Arctic oil and gas resource opportunities.

The final report of the Ministerial Special Representative is expected May 30th, 2008 and will provide analysis of the Act and make recommendations on potential changes.

In November
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Mr. Harrison's
appointment as
Ministerial Special
Representative.



FINANCIAL ADMINISTRATION OF INTERESTS

Pursuant to the terms of conditions of exploration licences pursuant to section 24(1) of the *Canada Petroleum Resources Act*, the Department holds financial security deposits with respect to exploration licences; these deposits are refundable to interest holders under certain conditions. Revenues from the administration of interests include three sources in general: forfeitures, non-refundable rentals, and fees.

Forfeitures

Following a Call for Bids for exploration licences, successful bidders are required to post 25% of the work proposal bid as security against the performance of work. This deposit is referred to as the work deposit. The work deposit is refundable as expenditures are incurred within Period 1 of the licence term. Since work deposits represent 25% of the total work proposal bid, refunds are likewise prorated on the basis of 25% of the allowable expenditures incurred. Any work deposit balance remaining at the end of Period 1 is forfeited.

In order to meet the work requirement, Period 1 may be extended yearly by posting a drilling deposit (currently one million dollars) before the end of the last year of Period 1. A drilling deposit will be refunded in full if the licence is validated by the drilling of a well as required to obtain tenure for Period 2. If a validation well is not drilled or has not begun within the one year extension, the drilling deposit will be forfeited upon the termination of the licence at the end of Period 1.

In the 2015 calendar year, forfeiture revenue was \$0.

Rentals

Period 2 of an exploration licence carries rental obligations. Period 2 rentals are also refundable as expenditures and are incurred at the rate of one dollar refund for one dollar of allowable expenditure. The Department also collects non-refundable rentals from the Norman Wells Proven Area leases. These are payable annually, in advance of the anniversary date of the leases.

In the 2015 calendar year, rental revenue was \$933,000.

Fees

Pursuant to section 13 of *Frontier Lands Registration Regulations*, various fees for services are payable, such as the issuance of new exploration licences, registration of instruments or provision of copies of abstracts. Table 3 outlines revenues from administration of interests in 2015.

In the 2015 calendar year, revenue from issuance fees and fees for service was \$1,503.



Table 3: Revenues from Administration of Interests, 2011-2015

	2011	2012	2013	2014	2015
Forfeitures ¹	25,784,658	1,631,597	50,000	599,830	0
Non-refundable rentals ²	53,195	53,195	53,195	11,219	933
Fees ³	35,487	43,497	8,832	5,520	1,569
Total	25,873,340	1,728,289	112,027	616,569	2,502

¹ Forfeiture revenues result when the conditions associated with bid deposits, drilling deposits, work deposits or rentals are not met.

² Norman Wells Proven Area leases issued under the *Canada Oil and Gas Land Regulations* which are continued in force pursuant to subsection 114(4) of the *Canada Petroleum Resources Act*.

³ Insurance fees and fees for service (section 15 of the *Frontier Lands Registration Regulations*).

BENEFITS

Subsection 5.2 of the *Canada Oil and Gas Operations Act* and section 21 of the *Canada Petroleum Resources Act* require that a Benefits Plan be approved by the Minister of Indigenous and Northern Affairs before authorization of any oil and gas work or activity, or approval of a development plan relating to a pool or field on Frontier Lands in Nunavut, the Northwest Territories, and in the Arctic offshore.

A Benefits Plan represents a documented commitment by a company to provide employment to Canadians and full and fair opportunity to Canadian businesses. A Benefits Plan should include a detailed description of the proposed project as well as the major components, activities and milestones; supporting maps, tables and figures; and time frames. As such, Benefits Plans ensure that exploration and development activities create training and employment for the local and regional labour force and opportunities for local and regional businesses to provide goods and services.

In particular, the companies are encouraged to give first consideration to local northern Indigenous and other northern residents and businesses.

In 2015, no Benefits Plans were submitted as no exploration activity was conducted in Frontier Lands under INAC jurisdiction.



ENVIRONMENTAL CONSIDERATIONS

Environmental Studies Research Fund

The Environmental Studies Research Fund (ESRF) is a provision of Part VII of the *Canada Petroleum Resources Act*, and is funded through levies applied to oil and gas lands held by companies under licence. The research program sponsors environmental studies related to the exploration, development and production of oil and gas resources on Frontier Lands. The 2015 budget for the North approved by the Minister, based upon the recommendations of the ESRF Management Board, was \$1,769,000. This included a levy of \$886,000 to fund two new northern research studies: *Integrated Beaufort Observatory*; and *Experimental Spill to Research Spill Treating Agent Use in the Beaufort Sea*.

The following northern projects were ongoing in 2015: *Uniqueness of Fishes and Habitat Utilization in Oil and Gas Lease Blocks*; *Timing of Beluga Entry Relative to Ice Break-up in the Mackenzie Estuary during Late Spring*; *Quantitative Assessment of the Interaction Between Beaufort Sea Crude Oil and Suspended Sediments*; and *Roadmap for Countermeasures in Oil Spills*.

The Environmental Studies Research Fund sponsors environmental studies related to the exploration, development and production of oil and gas resources on Frontier Lands.

Details on ESRF, including annual reports and publications can be found at www.esrfunds.org.

Beaufort Regional Environmental Assessment

In March 2015, the Beaufort Regional Environmental Assessment (BREA) wrapped up four years and \$21.8 million of research and regional knowledge development in support of its goals of ensuring preparedness for offshore oil and gas activities in the Beaufort Sea. Research and working group results were shared through a Final Results Forum in the Inuvialuit Settlement Region in February 2015. This workshop brought together over 80 participants from Inuvialuit communities and organizations, research organizations, federal and territorial governments and industry.

More details on BREA, including the Final Results Forum, reports and publications can be found at: www.beaufortREA.ca.



ROYALTY MANAGEMENT

Part VI of the *Canada Petroleum Resources Act* governs the setting and collecting of royalties in respect of petroleum produced from Frontier Lands. The *Frontier Lands Petroleum Royalty Regulations* prescribe the royalty rates, the calculation, reporting and associated interest or penalties.

Two fields produced oil and/or gas in the Northwest Territories in 2014: the Ikhil gas field on the Mackenzie Delta and the Norman Wells oil field in the Central Mackenzie Valley. There are no producing fields in Nunavut or in offshore Arctic waters.

The Ikhil gas field lies on Inuvialuit Lands and continues to be administered by Canada behalf of the Inuvialuit pursuant to Section 7(94) of the *Inuvialuit Final Agreement*. Canada's responsibility to collect and remit royalties to the Inuvialuit continues after April 1, 2014, pursuant to the terms of the *Northwest Territories Land and Resource Devolution Agreement*. These royalties are not reported here.

Pursuant to the *Northwest Territories Land and Resource Devolution Agreement*, the Norman Wells Proven Area remains under federal jurisdiction. INAC continues to collect petroleum royalties associated with the Norman Wells Proven Area and remits such royalties to the Government of the Northwest Territories.

The total amount of royalties received and retained by Canada in the 2015 calendar year is \$0.

Table 4: Royalties Received, 2011-2015

2011	2012	2013	2014	2015
11,652,548	9,992,786	10,046,685	2,839,648 ¹	0 ²

¹ Figures for 2014 only include royalties collected from January to March 2014 for Norman Wells and Cameron Hills. Effective April 2014, any royalties for Cameron Hills project are collected by the Government of the Northwest Territories.

² INAC continues to collect royalties from the Norman Wells field and remit these royalties to the Government of the Northwest Territories.



FOR FURTHER INFORMATION

PETROLEUM AND MINERAL RESOURCES MANAGEMENT DIRECTORATE

Website: www.aadnc-aandc.gc.ca/eng/1100100036087.

To obtain further information, please contact appropriate individuals below by phone or in writing.

Mailing address:

Petroleum and Mineral Resources Management Directorate
Indigenous and Northern Affairs Canada
10 Wellington Street
Gatineau QC K1A 0H4
Telephone: 819-934-9181
Fax: 819-953-5828

Information on the resource management regime, Calls for Nominations and Bids, and other related information: Manager, Land Tenure – Telephone: 613-851-5104

Information on licence registration procedures and regulations, transfers and notices: Registrar – Telephone: 819-639-7318

Information on Petroleum and Mineral Resources Directorate maps, and geographic information system (GIS) data: Geomatics Officer – Telephone: 819-639-7481

Information on northern exploration history and geological/geophysical activities: Petroleum Geologist – Telephone: 819-639-7320

Information on royalty policy and royalty submissions: Petroleum Royalties Advisor – Telephone: 819-639-7460

Information on Benefits Plan requirements for Nunavut and Northern offshore: Economic Analyst – Telephone: 819-934-2244

NATIONAL ENERGY BOARD

The Operations Business Unit regulates the exploration, development and production of hydrocarbon resources in non-Accord Frontier Lands under the *Canada Petroleum Resources Act*, the *Canada Oil and Gas Operations Act*, and the *National Energy Board Act*.

The Frontier Information Office provides access to maps, technical information, geological and geophysical reports, well history reports and records.

National Energy Board
517 Tenth Avenue SW
Calgary AB T2R 0A8
Toll Free: 1-800-899-1265

Website: www.neb.gc.ca

GEOLOGICAL SURVEY OF CANADA

The Geological Survey of Canada Calgary provides public viewing and sampling facilities for cores and samples, and information on wells drilled north of 60 at its offices at:

Geological Survey of Canada Calgary
3303-33rd Street NW
Calgary AB T2L 2A7
Telephone: 403-292-7000

Website: <http://www.nrcan.gc.ca/earth-sciences/science/geology/gsc/17100>

Information on geosciences in the Baffin Bay – Davis Strait region is available from:

Geological Survey of Canada Atlantic
Bedford Institute of Oceanography
1 Challenger Drive, PO Box 1006
Dartmouth NS B2Y 4A2

Website: www.bio.gc.ca